

Space Weather Highlights
18 – 24 June 2007

SEC PRF 1660
26 June 2007

Solar activity was very low. No flares were observed. The visible disk was spotless during the period. No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 19 June.

The geomagnetic field was quiet at all latitudes during 18 – 20 June. Field activity increased to quiet to active levels during 21 – 22 June with minor to major storm periods detected at some high latitude stations. Field activity decreased to quiet to unsettled levels during 23 – 24 June, though active to minor storm periods were observed at some high latitude stations on 23 June. ACE data indicated the increased 21 – 23 June activity was due to a solar sector boundary crossing (away (+) to toward (-)) followed shortly thereafter by a recurrent coronal hole high-speed stream. The boundary change occurred in a gradual fashion on 21 June (during approximately 21/0000 – 1800 UTC). A brief increase in proton densities was associated with the boundary crossing with a peak of 38 p/cc detected at 21/0911 UTC. A period of increased interplanetary magnetic field (IMF) variability was also associated with the boundary crossing with total IMF intensity peak of 11 nT at 21/0943 UTC and a minimum southward Bz reading of -9 nT at 21/1036 UTC. The recurrent coronal hole high-speed stream commenced early on 21 June, reached a peak of 597 km/sec at 23/1328 UTC, then gradually decreased during the rest of the period.

Space Weather Outlook
27 June – 23 July 2007

Solar activity is expected to be at very low to low levels. Isolated C-class flares are possible during 28 June – 11 July due to the return of old Region 960 (S07, L = 176).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels during 27 June, 02 – 05 July, and 16 – 17 July.

Geomagnetic field activity is expected to be at quiet to unsettled levels during 27 June – 10 July, though active levels may occur on 30 June due to a weak, recurrent coronal hole high-speed stream. Activity is expected to increase to quiet to active levels on 11 - 12 July due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 13 – 17 July. An increase to quiet to active conditions is expected during 18 – 20 July with minor storm periods possible on 19 July due to another recurrent coronal hole high-speed stream. Mostly quiet conditions are expected during 21 – 23 July.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
18 June	67	0	0	<A1.0	0	0	0	0	0	0	0	0
19 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
20 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
21 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
22 June	65	0	0	<A1.0	0	0	0	0	0	0	0	0
23 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
24 June	67	0	0	<A1.0	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
18 June	6.9E+5	1.7E+4	3.8E+3		3.5E+7	
19 June	6.2E+5	1.7E+4	4.0E+3		5.0E+7	
20 June	7.3E+5	1.7E+4	3.8E+3		5.7E+7	
21 June	1.5E+6	1.8E+4	3.7E+3		2.1E+7	
22 June	2.5E+6	1.7E+4	3.7E+3		1.4E+7	
23 June	7.1E+5	1.7E+4	3.6E+3		1.6E+7	
24 June	5.7E+5	1.7E+4	3.7E+3		3.3E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
18 June	5	1-1-2-1-1-2-2-2	3	0-1-1-1-1-1-1-1	5	1-1-1-2-1-2-2-2
19 June	5	2-2-2-1-2-1-0-1	4	1-1-2-2-1-2-1-0	7	2-3-2-2-1-2-1-1
20 June	2	1-0-0-0-1-1-1-1	2	1-1-0-2-0-0-0-0	4	1-1-0-1-1-2-1-1
21 June	8	0-1-1-2-3-2-3-3	11	1-1-2-2-4-4-2-2	14	1-2-3-3-3-3-3-4
22 June	12	4-2-3-2-2-1-3-3	25	4-3-5-6-3-1-2-2	16	4-3-4-4-2-2-3-3
23 June	8	3-2-3-1-1-1-2-2	14	3-4-5-2-1-1-1-2	11	3-3-3-1-1-2-3-2
24 June	4	2-1-1-1-1-1-2-1	6	2-1-1-3-2-1-1-1	6	3-2-1-1-2-1-2-2

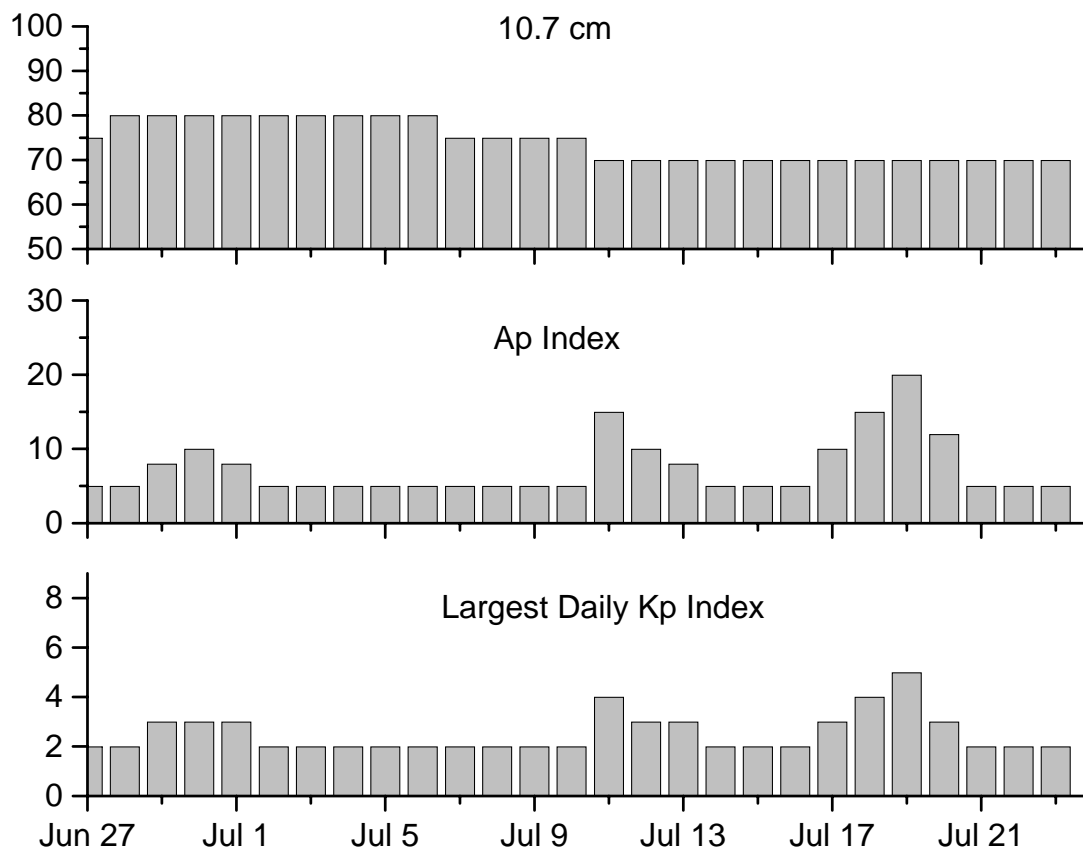


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
19 Jun 1505	ALERT: Electron 2MeV Integral Flux >1000pfu	19 Jun 1445
20 Jun 1608	ALERT: Electron 2MeV Integral Flux >1000pfu	20 Jun 1550
21 Jun 1023	WARNING: Geomagnetic K=4	21 Jun 1023 - 1600
21 Jun 2300	WARNING: Geomagnetic K-index =4	21 Jun - 22/1600
21 Jun 2314	ALERT: Geomagnetic K=4	21 Jun 2313



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
27 June	75	5	2	11 July	70	15	4
28	80	5	2	12	70	10	3
29	80	8	3	13	70	8	3
30	80	10	3	14	70	5	2
01 July	80	8	3	15	70	5	2
02	80	5	2	16	70	5	2
03	80	5	2	17	70	10	3
04	80	5	2	18	70	15	4
05	80	5	2	19	70	20	5
06	80	5	2	20	70	12	3
07	75	5	2	21	70	5	2
08	75	5	2	22	70	5	2
09	75	5	2	23	70	5	2
10	75	5	2				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
			½	Integ		Imp/	Location		Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	Brtns	Lat	CMD	#	245	2695	II

No Events Observed

Flare List

Date	Time			Optical	Imp /	Location	Rgn
			End	X-ray	Brtns	Lat CMD	
	Begin	Max	End	Class.			

18 June No Flares Observed
 19 June No Flares Observed
 20 June No Flares Observed
 21 June No Flares Observed
 22 June No Flares Observed
 23 June No Flares Observed
 24 June No Flares Observed

Region Summary

Region Summary																	
Location			Sunspot Characteristics														
			Flares														
Helio			Area	Extent	Spot	Spot	Mag	X-ray			Optical						
Date	(° Lat ° CMD)	Lon	(10 ⁻⁶ hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4		

No Active Regions

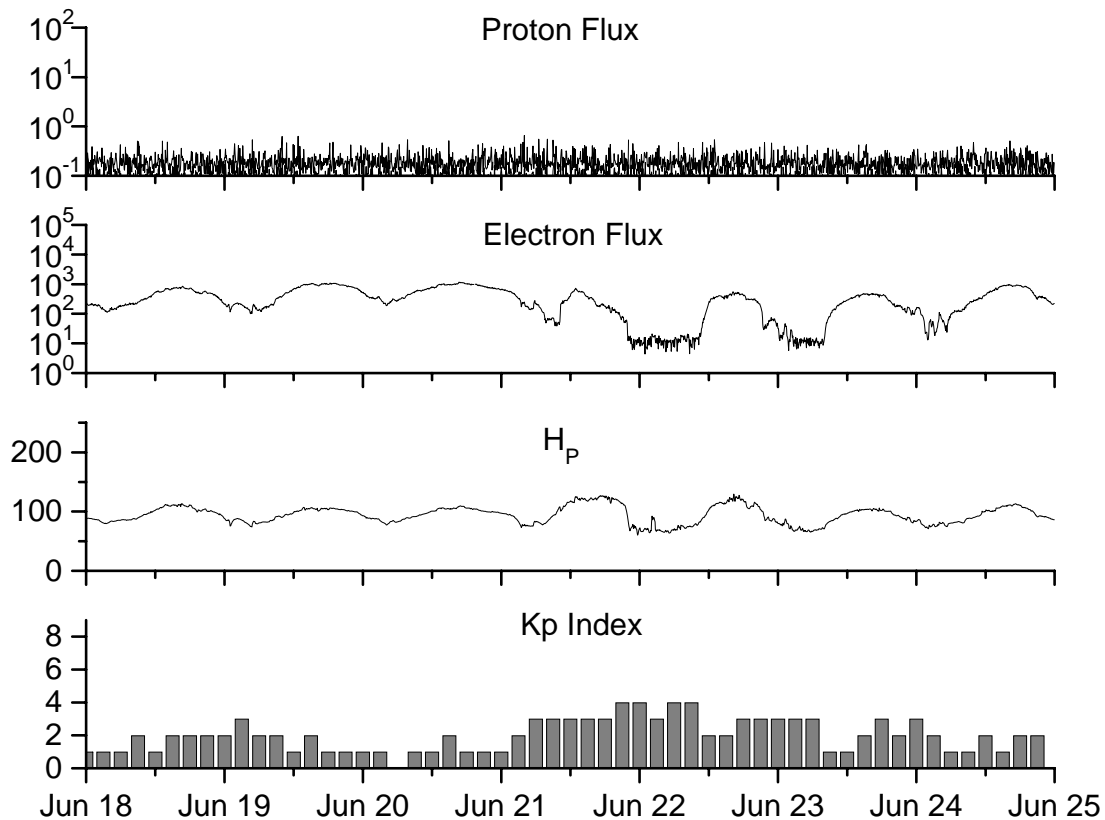


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2005									
June	59.8	39.6	0.66	47.9	28.9	93.7	91.9	13	13.9
July	71.0	39.9	0.56	48.1	29.2	96.6	90.9	16	13.1
August	65.6	36.4	0.55	45.4	27.5	90.7	89.3	16	12.2
September	39.2	22.1	0.56	42.9	25.9	90.8	87.8	21	11.8
October	13.0	8.5	0.65	42.6	25.5	76.7	87.4	7	11.6
November	32.2	18.0	0.56	42.1	24.9	86.3	86.7	8	11.1
December	62.6	41.2	0.66	40.1	23.0	90.8	85.4	7	10.4
2006									
January	28.0	15.4	0.55	37.2	20.8	83.8	84.0	6	9.9
February	5.3	4.7	0.89	33.4	18.7	76.6	82.6	6	9.2
March	21.3	10.8	0.51	31.0	17.4	75.5	81.6	8	8.4
April	55.2	30.2	0.55	30.6	17.1	89.0	80.9	11	7.9
May	39.6	22.2	0.56	30.7	17.3	81.0	80.8	8	7.9
June	37.7	13.9	0.37	28.9	16.3	80.1	80.6	9	8.3
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
August	22.8	12.9	0.57	27.6	15.6	79.0	80.3	9	8.7
September	25.2	14.5	0.58	27.7	15.6	77.8	80.2	8	8.7
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61			84.3		15	
2007									
January	26.6	16.9	0.64			83.5		6	
February	17.2	10.6	0.62			77.8		6	
March	9.7	4.8	0.49			72.3		7	
April	6.9	3.7	0.54			72.4		9	
May	19.4	11.7	0.60			74.5		8	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 23, RI= 120.8, occurred April 2000. *After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 18 June 2007

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

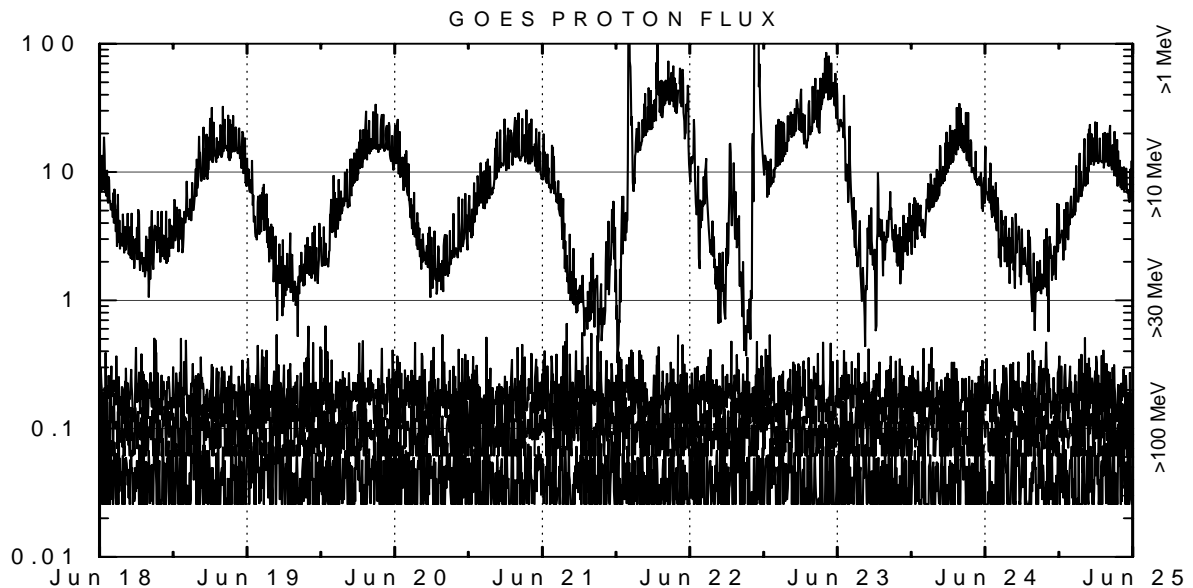
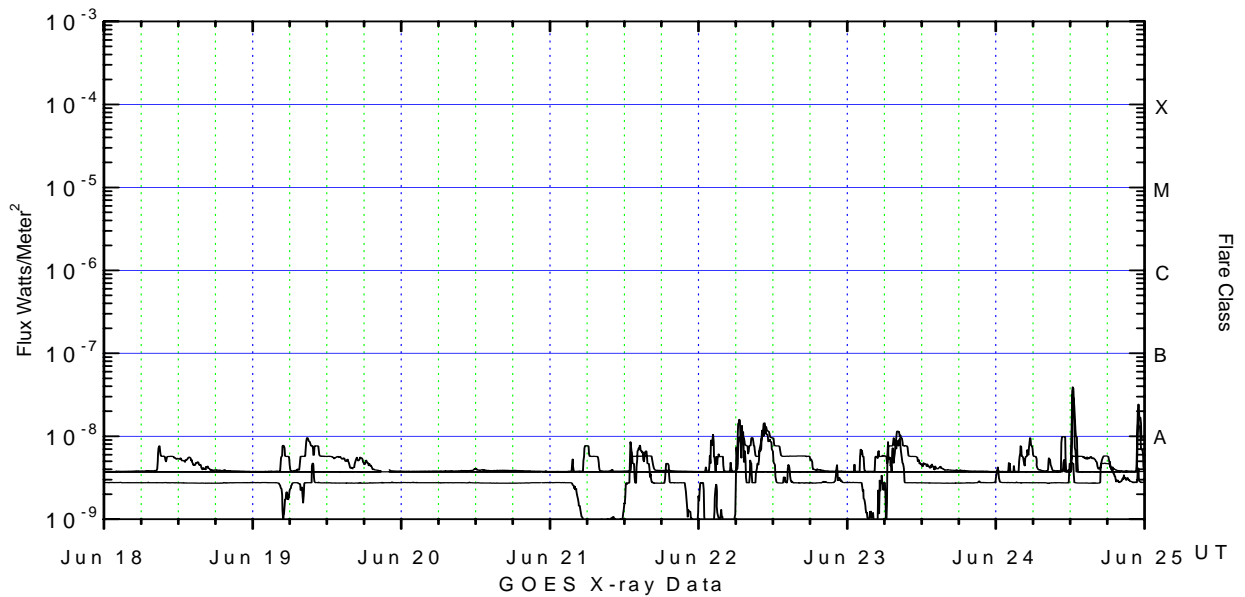
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SEC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are "global" parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five-minute averaged x-ray flux (watts/m^2) as measured by GOES 10 (W060) and GOES 11 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.

